United States Department of Agriculture

Animal and Plant Health Inspection Service

National Wildlife Research Center

Wildlife Services Seeking Solutions Through Research

Developing New Tools to Manage Rodents and Other Introduced Vertebrate Pests in Hawaii

Contact Information:
Research Wildlife Biologist
USDA/APHIS/WS/NWRC
Amauulu Road, P.O. Box 10880
Hilo, HI 96721
Phone: 808-961-4482 FAX: 808-961-4776
Website: www.aphis.usda.gov/ws/nwrc

National Wildlife Research Center Scientists Assess Environmentally Sound Methods to Reduce Crop and Natural Resource Damage

Wildlife Services' (WS) National Wildlife Research Center (NWRC) is the only Federal research facility devoted exclusively to resolving conflicts created by the interaction of wildlife and people through the development of effective, selective, and acceptable methods, tools, and techniques. The NWRC Hilo, Hawaii Field Station is ideally located to allow research biologists to develop methods needed to control rodent damage to native ecosystems and Hawaiian agricultural crops.

Rodents cause significant agricultural, natural resource, and human health impacts to the Hawaiian Islands. Where and when they are used, current control techniques provide inconsistent levels of protection from rodent damage. More effective methods for control are needed to resolve small mammal damage to agriculture, reforestation, native ecosystems, structures, and equipment. Collaboration with other state and federal agencies and private organizations is needed to develop techniques to reduce damage and manage rodents and other vertebrate species in natural areas. NWRC biologists conduct field and laboratory research to evaluate and improve methods to reduce and monitor rodent impacts on Hawaiian crops and natural resources.

Due to rapid diversification in Hawaiian agriculture, there is a need to assess economic impacts of damage to new crops both by rodents and other recently introduced vertebrate pest populations. Research efforts covered by this project address, when appropriate, the parallel vertebrate pest management needs of the Hawaiian agriculture industry and the conservation community.

Groups Affected By These Problems:

Macadamia nut producers
Farmers
Horticulture industry
Wildlife managers
Natural resource managers

Applying Science and Expertise to Wildlife Challenges

Cost Effective Integrated Pest Management—NWRC scientists are assessing effects of various techniques for protecting Hawaiian crops and natural resources. In addition, NWRC researchers are developing information and guidelines for producers to effectively minimize quantities of pesticides for successfully managing rodent damage.

Alternative Baits—NWRC scientists are identifying and evaluating alternative rodenticide baits for ecologically sound management of rodents in Hawaiian crops and natural resources and compiling data for registration of these baits. These field tests are being conducted on roof rats, a species that decimates macadamia nut orchards in different geographic regions of Hawaii.

Introduced Invasive Species—The negative impact of introduced species on island ecosystems is severe. Recently in Hawaii, a species of greenhouse frogs was introduced from the Caribbean. Besides its propensity for reproducing quickly and its piercingly loud night time call, it eats the insects and snails that native forest birds rely on for survival. NWRC scientists are studying ways to manage the outbreak of this invasive species in Hawaii.

Major Research Accomplishments:

WS is obtaining data to register the toxicant, diphacinone, to control rats in native ecosystems

WS identified caffeine as an effective toxicant for introduced tree frogs in horticultural nurseries

Selected Publications:

Campbell, E.W. III, G.H. Rodda, T.H. Fritts and R.L. Bruggers. 1999. An Integrated Management Plan for the Brown Tree snake (Boiga irregularis) on Pacific Islands. In G.H. Rodda, Y. Sawai, D. Chizar and H. Tanaka, eds. Problem Snake Management: The Habu and the Brown Treesnake. Cornell University Press: Ithaca, NY. pp. 423-435.

Kraus, F., E.W. Campbell III, A. Allison and T. Pratt. 1999. *Eleutherodactylus* Frog Introductions to Hawaii. *Herpetological Review* 30(1):21-25.

Dunlevy, P.A., E.W. Campbell III and G.D. Lindsey. 2000. Broadcast Application of a Placebo Rodenticide Bait in a Native Hawaiian Forest. *Int'l. Biodeterioration & Biodegradation* 45:199-208.